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| 10/736,354 | 12/15/2003 | Robert Oliver Buckingham | 03485-P0009A | 4073 |

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EXAMINER

HANSEN, COLBY M

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| ART UNIT | PAPER NUMBER |
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3682

DATE MAILED: 03/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/736,354

Applicant(s)

BUCKINGHAM ET AL.

Examiner

Colby Hansen

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 January 2006.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,6-13,15-26 and 28-36 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-2, 4, 6-13, 15-26, and 28-36 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 4, 6-13, 15-26, 28-31 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stelle (US Pat. 3,266,059) in view of Raines (US Pat. 5,297,874).

Stelle (US Pat. 3,266,059) discloses a robot arm link assembly (fig. 6) comprising first and second link members (75-80) each adapted for limited movement one with respect to the other and resilient means disposed between said first and second member characterized in that the first and second members are configured in a cooperating mating relationship.

However, Stelle (US Pat. 3,266,059) doesn't disclose a plurality of thin layered polyimide (elastomer, Kevlar, ect.) placed between the links.

Raines (US Pat. 5,297,874) discloses a thin plurality of elastomeric layers (polymides, Kevlar, etc.) forming a bearing surface between relatively movable parts. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the bearing structure of Raines (US Pat. 5,297,874) between the links of Stelle (US Pat. 3,266,059) so as to protect the links from overstress due to outside stimuli, as suggested by Raines (US Pat. 5,297,874).

Furthermore, while a specific thickness is not disclosed by Raines (US Pat. 5,297,874) it would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized a specific thickness range in order to conform to the compressional force inputs, and/or cost specifications of the assembly, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Additionally, the method by which the elastomeric layer(s) are adhered to the links is a product-by-process recitation, therefore the layer(s) of Raines (US Pat. 5,297,874) must only be theoretically capable to such a procedure, which they are.

Finally, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have made the first and second links separable from one another and halved from themselves so as to allow for easier fabrication (draft angles of molding or casting), since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. Nerwin v. Erlichman, 168 USPQ 177, 179.

Claims 32-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stelle (US Pat. 3,266,059) in view of Raines (US Pat. 5,297,874) as applied to claims 1-13 and 14-31 above, and further in view of Birchard (US Pat. 4,751,821).

Stelle (US Pat. 3,266,059) discloses the claimed invention except for a lubricant cooling means for the robot.

Birchard (US Pat. 4,751,821) discloses a lubricant cooling means for a snake-like robot.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the lubricant cooling means of Birchard (US Pat. 4,751,821) within Stelle (US Pat. 3,266,059) so as to allow for supplementary actuation of the snake robot assembly.

Response to Arguments

Applicant's arguments filed 1/5/2006 have been fully considered but they are not persuasive.

Applicant argues that Stelle discloses “compressive resilient material, such as rubber, foamed plastic, and the like” and therefor does not teach “substantially no compression permitted”. However, that particular area is referring to the embodiment of figure 2, but the embodiment of figure 6, does show “substantially no compression” between the convex and concave faces due to relative movement, as broadly recited.

Applicant also argues that Raines specifically teaches that the apparatus is formed to accommodate high compressive loads. While this is true, there would be little or no compressive loads (and certainly no “high” compressive loads) during relative movement of the combination of Stelle in view of Raines that would create compressive loads, such that the broadly recited “substantially no compress movement” is met (not only by Stelle by itself, but also by the combination of Stelle and Raines).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching,

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suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the Raines reference is a bearing surface, and bearing surfaces are ubiquitous to most mechanical devices, therefore to utilize its teaching within Stelle is obvious and proper.

Applicant argues that Raines is designed for compression due to high loads. While Examiner agree the bearing surface is designed for high loads, it is my contention compression is, even under said high loads there is little enough movement to anticipate applicant's very broad limitation of "substantially no compressive movement". Additionally, implementation of said bearing surface upon the robotic linkage of Stelle would perform the function of substantially no compression when the combinational robot is in the act of non-loaded orientation.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Specifically, regarding the elastomer means is provided by the Raines reference.

Applicant argues that the lubricant heating and cooling means does not serve the same function as applicants'.

There is reason to believe, based on the similarity of (material, structure, etc.), that the functional limitation(s) of heating and cooling the robot assembly depending upon environment

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may be (an) inherent characteristic(s) of Birchard. In accordance with *In re Best*, 562 F.2d 1252, 195 USPQ 430, 433 (CCPA 1977).

[w]here the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied on.

This “burden of rebutting [may be of] the PTO’s reasonable assertion of inherency under 35 USC 102, or of prima facie obviousness under 35 USC 103” (195 USPQ at 432).

Accordingly, the burden is placed upon the applicant to prove that the limitation(s) in question is/are not (an) inherent characteristic(s) of the reference disclosure.

FACSIMILE TRANSMISSION

Submission of your response by facsimile transmission is encouraged. Group 3600's facsimile number is **(571) 273-8300**. Recognizing the fact that reducing cycle time in the processing and examination of patent applications will effectively increase a patent’s term, it is to your benefit to submit responses by facsimile transmission whenever permissible. Such submission will place the response directly in our examining group’s hands and will eliminate Post Office processing and delivery time as well as the PTO’s mail room processing and delivery time. For a complete list of correspondence **not** permitted by facsimile transmission, see MEP. 502.01. In general, most responses and/or amendments not requiring a fee, as well as those

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requiring a fee but charging such fee to a deposit account, can be submitted by facsimile transmission. Responses requiring a fee which applicant is paying by check **should not be** submitting by facsimile transmission separately from the check.

Responses submitted by facsimile transmission should include a Certificate of Transmission (MEP. 512). The following is an example of the format the certification might take:

I hereby certify that this correspondence is being facsimile transmitted to the Patent and Trademark Office (Fax No. (703) 872-9306) on _____

(Date)

Typed or printed name of person signing this certificate:

(Signature)

If your response is submitted by facsimile transmission, you are hereby reminded that the original should be retained as evidence of authenticity (37 CFR 1.4 and MEP. 502.02). Please do not separately mail the original or another copy unless required by the Patent and Trademark Office. Submission of the original response or a follow-up copy of the response after your response has been transmitted by facsimile will only cause further unnecessary delays in the

processing of your application; duplicate responses where fees are charged to a deposit account may result in those fees being charged twice.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Colby Hansen whose telephone number is (571) 272-7105. The examiner can normally be reached on Monday through Thursday and every other Friday from 7:30 PM to 5:00 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley, can be reached on (571) 272-6917. Any inquiry of a general nature

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or relating to the status of this application or proceeding should be directed to the Group
receptionist whose telephone number is (703) 308-2168.

Colby M. Hansen

Patent Examiner

 3/20/06


RICHARD RIDLEY
SUPERVISORY PATENT EXAMINER